

**PATENT APPLICATION**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Anton Johannes Josef Hendriks et al.

Group Art Unit: 1794

Application No.: 10/582,161

Examiner: JILL M. GRAY

Filed: June 8, 2006

Docket No.: 119567

For: ARAMID FIBRILS

**DECLARATION UNDER 37 C.F.R. §1.132**

I, Dr. Ir. Walter Hendrikus Niseta Nijhuis, a citizen of The Netherlands, hereby declare and state:

1. I have degrees in Chemistry which was conferred upon me by University of Twente, The Netherlands: a chemical engineering degree in 1984, and a PhD degree in 1988.
2. I have been employed by the Teijin Aramid in Arnhem, the Netherlands, since April 1, 2008 and I have had a total of more than 20 years of work and research experience in chemistry in general, more particular in the field of organic and polymer chemistry (monomers, polymers and rubber chemicals).
4. My publications include the following works in this field:

Patents:

WO 199413705 – Process for molecular weight regulation in (co)polymers

WO 1996030415 – Alkoxyallyl (di)peroxide chain transfer agents

Articles:

Walter H. N. Nijhuis et al., *Tetrahedron Lett.* 1984, 25, 4309-4312

Walter H. N. Nijhuis et al., *J. Am. Chem. Soc.*, 1987, 109 (10), pp 3136-3138

Self-reproduction of chirality in carbon-carbon bond formation via dipolar intermediates generated in situ by [1,5] hydrogen transfer

L.C. Groenen, W.H.N. Nijhuis, *Tetrahedron* 1988:44(14);4637-4644

The tertiary amino effect in heterocyclic synthesis: Mechanistic and computational study of the formation of six-membered rings

Walter H. N. Nijhuis et al., *J. Org. Chem.*, 1989, 54 (1), pp 199-209

Stereochemical aspects of the "tert-amino effect". 1. Regioselectivity in the synthesis of pyrrolo[1,2-a]quinolines and benzo[c]quinolizines

Walter H. N. Nijhuis et al., *J. Org. Chem.*, 1989, 54 (1), pp 209-216

Stereochemical aspects of the "tert-amino effect". 2. Enantio- and diastereoselectivity in the synthesis of quinolines, pyrrolo[1,2-a]quinolines, and [1,4]oxazino[4,3-a]quinolines

W.H.N. Nijhuis, et al., *Recl. Trav. Chim. Pays-Bas* 1989:108, 172-178

The tert-amino effect in heterocyclic chemistry: synthesis of tetra- and pentacyclic compounds

5. I am not a named inventor in the above-captioned patent application.
6. I am not compensated for my work in connection with this Declaration.
7. I have read and understood US patent application 10/582,161 (the patent application) and reviewed US 5,442,003 (Takahashi) and US 6,942,757 (Iwama).

8. That the fibrils as obtained by the method of the patent application are different from the pulp containing fibrils as described in Takahashi.

9. The difference between these materials is that the fibrils according to the patent application as directly obtained from the spin dope (i.e. without first making a fiber that must be cut into pieces and be refined to fibrillate the cut fiber) do not contain stems. This is shown in Fig. 1 that has been attached to this declaration. In this figure, which is a microscopy photograph (50 x magnified) of the material as obtained by the process of the patent application, a multitude of fibrils can be seen that are partially entangled with other fibrils, but which are not attached to a stem. According to this figure no stems are present at all.

10. Stems are the consequence of using (cut) fiber for a fibrillation process (refining). The refining process is a process wherein cut fiber is milled as aqueous slurry in a refiner. The cut fiber consists of a multitude of filaments which get more or less detached from each other in the slurry. In the refining process fibrils are being generated out of (or from) the filament stem. Most fibrils are still attached to the stem, but some may be fully detached by the refining process. These fibrils can only be generated by such sort of refining process from the filaments, thus a stem will always be present.

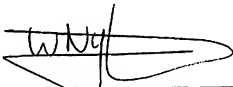
11. Fig. 2 is attached to this declaration. In this figure a microscopy photograph (50 x magnified) of pulp is shown that was obtained by the method of Takahashi. Thus para-aramid fiber was obtained by directly spinning p-aramid to the fiber from a spin dope by applying an air gap spinning process. The fiber obtained was cut into small pieces, and these pieces were subjected to a refining process. Fig. 2 shows stems which are visible as ribbon-like elements. To these stems smaller fibrils are attached. The photograph does not show free fibrils that may occur in small quantities. The photograph shows a cut of a fiber, leading to stems having a "cut" (second stem from the left).

12. Figs. 1 and 2 show that the materials as obtained by the method of the patent application and by the method of Takahashi are physically different. Therefore their mechanical properties must be different also.

13. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: \_\_\_\_\_

September 4, 2009

  
\_\_\_\_\_  
Dr. H. Walter Nijhuis

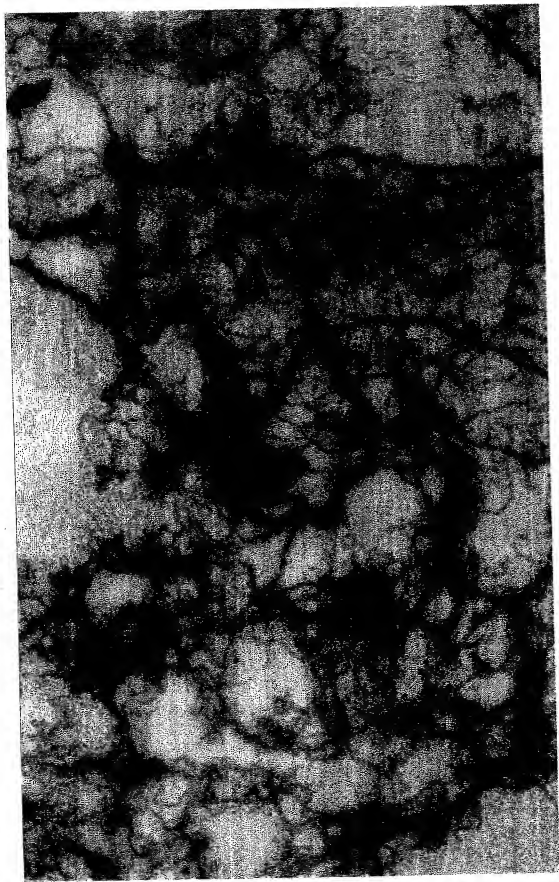


Fig. 1. Jet spun material according to the invention containing only fibrils



Fig. 2. Pulp according to Takahashi (US 5,442,003) containing stems and extending fibrils